

A Wrench in the Works

Some who make science an object of study like to point out how vulnerable it is to human weakness despite its noble purpose and idealized structure. One published list of 34 known or suspected perpetrators of scientific fraud began with Hipparchus in 2 BC, ended with a Wake Forest immunologist in 1981, and included such famous scientists as Newton and Mendel (Broad W, Wade N. *Betrayers of the truth*. New York: Simon and Schuster; 1982). Indeed, part of the impetus for the American Medical Association peer-review congresses was the case in 1981 of John R Darsee, a Harvard cardiologist whose fraudulent data were published in journals like the *New England Journal of Medicine* and *Circulation*.

Now a similar case has occurred in the physical sciences, which, according to an article in *The Boston Globe*, have long prided themselves on largely avoiding such research fraud, perhaps because, until the importance of computer technology to the marketplace, the physical sciences had been free of the external pressures that bear on medical sciences (Cook G. Ambition can combat the purity of physics. *Boston Globe* 2002 Sep 28:A3). Fraudulent data from this most recent culprit, J Hendrik Schon, were published in *Nature* and *Science*.

Below are just a few of the many articles written on this problem that has plagued science since ancient times.

CLASSIC WORK: Merton RK. Priorities in scientific discovery. *Am Soc Rev* 1957;22:635-59.

Merton addresses alleged sources of conflicts over priority and the effect they have on the practice of science. He describes the types of response to the emphasis on originality in science—fraud, plagiarism, and the “itch to publish” due to a ritualistic measure of accomplishment by publication.

Szilagyi DE. The elusive target: truth in scientific reporting. *J Vasc Surg* 1984;1:243-53.

An account of misdeeds in science from its beginning, but Szilagyi maintains that none were genuinely fraudulent until the end of the 19th century except for the Piltdown man.

CLASSIC WORK: Stewart WW, Feder N. The integrity of the

scientific literature. *Nature* 1987;325:207-14.

This article reports results of a detailed analysis of the more than 100 publications written by John R Darsee and 47 coauthors over a 3-year period.

Francis JR. The credibility and legitimation of science: a loss of faith in the scientific narrative. *Accountability Res* 1989;1:5-22.

The coexistence of scientific misconduct and the ideal of the grand narrative of science is portrayed as a postmodern crisis. Owing to the emphasis on originality, replication is weakened as a control factor in science.

Carland JA, Carland JW, Aby CD. Proposed codification of ethicality in the publication process. *J Business Ethics* 1992;11(2):95-104.

This article examines examples of abuse of the editorial process and culminates with a proposed code of ethics for researchers, referees, and editors. (Is “ethicality efficacy” another way to say “good”?)

Andersen D, Axelsen NH, Riis P. Scientific dishonesty and good scientific practice. *Dan Med Bull* 1993;40:250-2.

These authors propose that data be stored for 8 to 10 years, preferably 15, in an easily accessible and permanent form and that tabular data and figures be traceable to raw data.

Woodward J, Goodstein D. Conduct, misconduct and the structure of science. *Am Sci* 1996;84:479-90.

These authors argue that many plausible-sounding ethical principles cannot reasonably be applied to the scientific enterprise. Scientists cannot always be expected to point out flaws and alternative explanations when they present their work. Scientific misconduct needs to be distinguished from general unethical behavior. (An academic engineer’s detailed response to this article is available at www.ie.ncsu.edu/jwilson/colloq.html. See also www.hss.caltech.edu/ses/GoodsteinDavidL.html.)